

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

~~1.~~ 1-16 (canceled).

~~17.~~ (New) A semiconductor device comprising:

a semiconductor substrate optionally personalized with electronic devices formed thereon;

at least one copper interconnect pad formed on said substrate; and

a layer of a zinc complex formed on said at least one interconnect pad, wherein said complex comprises:

copper ion,

zinc ion,

an organic acid and

an azole.

~~18.~~ (New) The semiconductor device, according to claim ~~17~~¹, wherein said zinc complex further comprises a surfactant.

~~19.~~ (New) The semiconductor device, according to claim ~~17~~¹, wherein said zinc complex further comprises an amine.

~~20.~~ (New) The semiconductor device, according to claim ~~17~~¹, wherein said zinc complex further comprises a complexing agent.

~~21.~~ (New) The semiconductor device, according to claim ~~17~~¹, wherein the molar ratio of said zinc ion to said azole is from about 1:1 to about 2:1.

- ~~6.~~
~~22.~~ (New) The semiconductor device, according to claim ~~17~~¹, wherein said azole is benzotriazole.
- ~~7.~~
~~23.~~ (New) The semiconductor device, according to claim ~~18~~², wherein said surfactant is a nonionic surfactant.
- ~~8.~~
~~24.~~ (New) The semiconductor device, according to claim ~~23~~⁷, wherein said surfactant is selected from the group consisting of SANDOPAN ECO and Triton DF16.
- ~~9.~~
~~25.~~ (New) The semiconductor device, according to claim ~~17~~¹, further comprising ammonia.
- ~~10.~~
~~26.~~ (New) The semiconductor device, according to claim ~~20~~⁴⁴, wherein said complexing agent is triethanolamine.
- ~~11.~~
~~27.~~ (New) The semiconductor device, according to claim ~~17~~¹, wherein said organic acid is acetic acid.
- ~~12.~~
~~28.~~ (New) The semiconductor device, according to claim ~~17~~¹, wherein said zinc complex layer is deposited from a solution comprising:
at least one azole present at a concentration of from about 0.001 to about 0.5 molar;
a zinc salt having present at a concentration of from about 0.1 to about 1 molar;
an organic acid; and
a complexing agent, and wherein
the pH of said solution is from about 5 to about 8.
- ~~13.~~
~~29.~~ (New) The semiconductor device, according to claim ~~17~~¹, further comprising a layer of a solder applied to said zinc complex layer.